



# UNITED STATES PATENT AND TRADEMARK OFFICE

MN  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,624	07/08/2005	Christopher Andrew Goat	DP-308036	2654
7590	04/11/2007		EXAMINER	
David P Wood Delphi Technologies Inc M/C: 480-410-202 P O Box 5052 Troy, MI 48007-5052			KIM, PAUL D	
			ART UNIT	PAPER NUMBER
			3729	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/11/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/517,624	GOAT, CHRISTOPHER ANDREW
	<b>Examiner</b>	<b>Art Unit</b>
	Paul D. Kim	3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-6, 9 and 10 is/are rejected.  
 7) Claim(s) 7 and 8 is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 06 December 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date: ____                                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/6/04, 12/26/06</u> .                                       | 6) <input type="checkbox"/> Other: ____                           |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because Fig. 1 appears to be labeled such as Fig. 1(a), Fig. 1(b) and Fig. 1(c). Also, Fig. 2 appears to be labeled such as Fig. 2(a) and Fig. 2(b). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

Art Unit: 3729

abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if

Art Unit: 3729

the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Objections***

5. Claims 1-10 are objected to because of the following informalities:

Re. Claim 1: The phrase "including" as recited in line 2 needs to be changed as -- comprising--.

After the phrase "ferroelectric material" recited in line 3, change "," to --;--.

Before the phrase "active element" recited in line 5, change "the" to --an--.

After the phrase "wherein" recited in line 7, change the phrase "adjacent layers" to --the adjacent ferroelectric layers--.

After the phrase "the sample (14)" recited in line 9, change "," to --;--.

After the phrase "the sample" recited in line 11, change "," to --;--.

After the phrase "direction" recited in line 14, change "," to --;--.

After the phrase "electrodes (18a, 18b)" recited in line 17, change "," to --; and--:

Re. Claims 2-10: Before the phrase "method" as recited in line 1, change a phrase "A" to -The--.

Re. Claim 3: The phrase "including" as recited in line 1 needs to be changed as --wherein--.

Re. Claims 4-8: The phrase "including" as recited in line 1 needs to be changed as --further comprising a step of--.

Re. Claims 9 and 10: The phrase "in which" as recited in line 1 needs to be changed as --wherein--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-6, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima (US PAT. 6,356,008) in view of Morinaga et al. (US PAT. 6,806,626).

Nakajima teaches a process of polarizing piezoelectric body comprising steps of: providing a block of ferroelectric material (1), which forms the active element of the actuator, the ferroelectric sample having first and second opposing end faces (top and

Art Unit: 3729

bottom), first and second opposing side faces (both sides), and a stack of ferroelectric layers (1a-1d), wherein the adjacent 1 ferroelectric layers are separated from one another by internal electrodes (2a-2c) arranged substantially parallel to the end faces of the ferroelectric material; applying a primary external electrode arrangement (5, 6) to the first and second end faces of the ferroelectric material as shown in Fig. 5A; applying a primary poling voltage to the primary external electrode arrangement so as to polarize substantially the entire ferroelectric ferroelectric material along a single, first polarization axis in a first polarization direction (P) as shown in Fig. 5A; applying a permanent secondary external electrode arrangement (3, 4) to the side faces of the ferroelectric material so that the secondary external electrode arrangement makes contact with the internal electrodes as shown in Fig. 5B; applying a secondary poling voltage to the secondary external electrode arrangement so as to polarize alternate ones of the ferroelectric layers along substantially the first polarization axis in the first polarization direction and the others of the ferroelectric layers are polarized along a second, oppositely directed polarization axis (P), thereby to polarize substantially the entire ferroelectric material and avoiding discontinuities in ferroelectric strain throughout the ferroelectric material as shown in Fig. 5B (see also col. 4, line 65 to col. 5, line 35).

However, Nakajima fails to teach how the block of ferroelectric material (1) is made or provided. Morinaga et al. teach a process of making an electronic component including a process of forming a plurality of internal electrodes layers (12) arranged within a piezoelectric block (11) follow by cutting the piezoelectric block in order to obtain a desired piezoelectric block (15) as shown in Fig. 3. Therefore, it would have

Art Unit: 3729

been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of polarizing piezoelectric body of Nakajima by cutting the piezoelectric block as taught by Morinaga et al. in order to obtain a desired piezoelectric block.

As per claim 2 Nakajima also teaches that the primary poling voltage is applied prior to the step of applying the secondary poling voltage as shown in Figs. 5A and 5B.

As per claim 3 Nakajima also teaches that a ferroelectric material in which the internal electrodes of the ferroelectric material are grouped into first and second interdigitated sets of electrodes, each set comprising a plurality of internal electrodes as shown in Figs. 5A and 5B.

As per claim 4 Nakajima also teaches that the primary external electrode arrangement from the ferroelectric material is removed prior to applying the secondary external electrode arrangement as shown in Figs. 5A and 5B.

As per claim 5 Nakajima also teaches that ferroelectric material is placed between a pre-mounted primary external electrode arrangement (layout of applying electric field) so that first and second primary electrodes contact the first and second end faces of the ferroelectric material respectively as shown in Fig. 5A.

As per claim 6 Nakajima also teaches that a conductive film (3 and 4) is applied to the first and second end faces to provide first and second primary external electrodes of the primary external electrode arrangement as shown in Fig. 5B.

As per claims 9 and 10 Nakajima also teaches that the primary voltage and the secondary voltage are applied in a range of 1 to 3KV.

***Allowable Subject Matter***

8. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record teaches all of the limitations as set forth above except a process of immersing the ferroelectric material and the primary electrode arrangement within a dielectric fluid for the duration of the application of the primary poling voltage. It is not obvious taken alone or in combination of other references fairly to suggest the claimed invention.

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D. Kim whose telephone number is 571-272-4565. The examiner can normally be reached on Monday-Thursday between 6:00 AM to 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 3729

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul D Kim  
Primary Examiner  
Art Unit 3729